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ABSTRACT

The digital portfolio should serve the same purpose as the traditional portfolio in teacher training programs. Both the traditional portfolio and the digital portfolio can be used as reflective instruments and diagnostic tools, unique vehicles that allow students to express who they are and what they can do. A logical construct for the digital portfolio can be developed by combining personal professional goals of preservice teachers with the standards set by the Interstate New Teacher Assessment and Support Consortium (INTASC). Additional benefits to be realized when incorporating digital portfolios in teacher training are: (1) teaching preservice educators technology skills within a relevant context: (2) eliminating storage problems; and (3) providing preservice teachers with a powerful tool for gaining employment. The dissemination of the digital portfolio can be accomplished by using either the CD-ROM or the World Wide Web. (Contains 16 references.) (Author/MES)

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Defining the Role of the Digital Portfolio in Teacher Education

Presented at the WVNET 2000 Conference

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Morgantown, WV

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Abstract

The digital portfolio should serve the same purpose as the traditional portfolio in teacher training programs. Both the traditional portfolio and the digital portfolio can be used as (a) a diagnostic tool, (b) a unique vehicle that allows students to express who they are and what they can do, and (c) a reflective instrument. A logical construct for the digital portfolio can be developed by combining personal professional goals of preservice teachers with the standards set by the Interstate New Teacher Assessment and Support Consortium (INTASC). Additional benefits to be realized when incorporating digital portfolios in teacher training are (a) teaching preservice educators technology skills within a relevant context, (b) eliminating storage problems, and (c) providing preservice teachers with a powerful tool for gaining employment. The dissemination of the digital portfolio can be accomplished by using either the CD-ROM or the World Wide Web.

Defining the Role of the Digital Portfolio in Teacher Education

What is a Portfolio?

When we hear the term portfolio, it usually conjures up images of a youthful artisan toting a valise of his most treasured works around one of Europe's grand, old cities. With the sun shining above the town, we can almost picture the youth's shadow being swallowed by those of the gothic buildings surrounding him as he ardently strides through the narrow, cobblestone streets. He is searching for a kindhearted gallery curator to showcase his creations, and if successful in his quest, he has the chance of captivating a wealthy patron, ensuring himself a comfortable existence.

This scenario, though quaint, is very different from the reality of what a portfolio epitomizes in education today. Over the past decade, the definition of a portfolio has shifted dramatically. Educationally speaking, the portfolio was initially a simple way of archiving a student's finest work in folders (Herbert, 1998). Quintessentially, the portfolio was viewed as merely a container. Today, however, it has come to symbolize a complete program of charting a student's progress, allowing the instructor to diagnose academic strengths and weaknesses (Abruscato, 1993). In addition, it has been shown that the portfolio is a powerful tool that can provide students with an outlet to express who they are and what they can do (Castiglione, 1996). In many institutions of higher education, the portfolio is now being used by preservice teachers as a reflective tool to identify personal changes to

such issues as multicultural sensitivity and personal attitudes towards clinical experiences (Martin-Kniep, 1993).

Types of Portfolios

Danielson and Abrutyn (1997) have identified nine different types of portfolios that are used in the educational milieu: (1) working portfolios, (2) display or presentation portfolios, (3) assessment portfolios, (4) community service portfolios, (5) interdisciplinary portfolios, (6) subject area portfolios, (7) admission portfolios, (8) employment portfolios, and (9) skill area portfolios. It is prudent to reduce this rather copious list to a more manageable number if a discussion of the role of the digital portfolio within the context of teacher education is to be attempted.

When speaking of the development of a professional portfolio for preservice teachers, there are essentially two types: a working portfolio and a presentation portfolio (Campbell, Cignetti, Melenyzer, Nettles, & Wyman, 1997). Each type serves a distinct function, with the working portfolio giving birth to the presentation portfolio.

Working portfolio. A working portfolio is simply a systematic collection of artifacts that is used by the student for self-assessment and the setting of both long and short-term goals. This type of portfolio contains all pertinent student work, regardless of quality. Because of this mixture of both academic successes and failures, the working portfolio has the ability to display the path students take towards mastery, which in turn reflects their personal growth and learning.

Presentation portfolio. A presentation portfolio is a compilation of a student's finest work. This type of portfolio is created by having the student, under the tutelage of an academic advisor, select exemplars from the working portfolio. By its nature, the development of a presentation portfolio is a deeply reflective exercise. The mental processes associated with compiling a presentation portfolio are evaluative in nature, thus, falling within the parameters of Bloom's highest cognitive domain.

Portfolios and Authentic Assessment

Any discussion of portfolios would not be complete if the issue of assessment was not broached. The need for varying assessment methods actually spawned the use of the portfolio in education; however, what is assessment?

Put succinctly, assessment is the formal or informal process of gathering evidence to gauge the progression of student learning (Hoy & Gregg, 1994). To many, assessment is a corollary to the term "test." This is unfortunate because a test is usually administered with an all-or-none mindset: The test taker will either pass or fail. A test is certainly a viable means of formally gathering evidence of student progress. However, it does not always convey the type of evidence that is needed, nor should it be perceived as the only device required in a comprehensive assessment program.

Crocker and Algina (1986) stated that a test could only offer a quantitative measure of a particular mental ability such as perceptual speed, word fluency, inductive reasoning, or verbal comprehension. Assessment programs must offer

both the instructor and the learner something more robust than a score on a particular scale. What is the alternative?

Enter the portfolio. Recently, portfolios have been aggressively used in educational circles as the calling card for authentic assessment. Authentic assessment, which is also known as performance assessment, may be thought of as evaluating the tasks students perform which are akin to those they would need to carry out in real-world situations (Wolf, 1999). Aficionados of authentic assessment believe that static assessment methods (i.e., tests) do not capture growth in the individual; they merely offer a "snapshot in time" of a student's ability (Valencia et al, 1990). Because of the consistent adding of artifacts to the working portfolio, a newfound concern regarding the quality of completed work is present on the student's part. Thus, applying the portfolio approach to assessment can be likened to instituting a state of constant assessment, and research purports that students exhibit greater levels of achievement when frequently assessed (Crooks, 1988; Kulik & Kulik, 1988). It must also be noted that authentic assessment values the deep, reflective thought that goes into the creative process as much as the final product itself.

The Portfolio in Teacher Education

The role of the portfolio in teacher education goes beyond the previously touted purposes of (a) it being an authentic assessment/diagnostic tool, (b) a unique manner in which one can creatively display who they are and what they can do, or (c) a reflective instrument. Barton and Collins (1993) justified the use of

portfolios in education due to their power to convey to students a purpose for the educational process. They purported that when one is armed with a sense of purpose, ownership of the process will follow. Consequently, by building a portfolio, preservice teachers gain keen insight into the educational process through the creation of a product. In essence, the portfolio has the potential to fuse the diametrically opposed views of what is most important in education, process or product.

Establishing goals and meeting standards. The setting of personal professional goals is certainly important in preparing preservice educators to become master teachers. Developing these goals requires a trusting relationship between student and advisor. Sensitive issues such as personal strengths and weaknesses must be discussed when setting these personal goals. Moreover, many professional organizations have established professional standards for both preservice and practicing educators in order to ensure their readiness for the challenges of twenty-first century classrooms.

As Campbell et al. (1997) reported, state departments of education, and professional organizations such as the National Association for the Education of Young Children and the National Council of Teachers of Mathematics, along with a host of others, have all set standards germane to their particular educational mission. In order to make the portfolio a practical tool in teacher training, schools of education should combine personal professional goals developed by student and

academic advisor with the ten standards suggested by the Interstate New Teacher Assessment and Support Consortium (INTASC) (Campbell et al.).

The INTASC has suggested ten areas of assessment for new teachers. These assessment areas should serve as a guide when assembling a preservice teacher's professional portfolio; furthermore, each would act as a heading when indexing the portfolio. Campbell et al. (1997 p. 6) recommended the following construct:

- Heading/Standard #1 – Knowledge of Subject Matter;
- Heading/Standard #2 – Knowledge of Development and Learning;
- Heading/Standard #3 – Adapting Instruction to Individual Needs;
- Heading/Standard #4 – Multiple Instructional Strategies;
- Heading/Standard #5 – Classroom Motivation and Management Skills;
- Heading/Standard #6 – Communication Skills;
- Heading/Standard #7 – Instructional Planning Skills;
- Heading/Standard #8 – Assessment of Student Learning;
- Heading/Standard #9 – Professional Commitment and Responsibility;
- Heading/Standard #10 – Partnerships with Colleagues, Students, Parents and Agencies.

The Digital Portfolio in Teacher Education

The digital portfolio should serve the same purpose in teacher education as its more traditional hard-copy cousin, but it happens to be "packaged" in a digital form. The appraisal of such a work would proceed as if one were evaluating the traditional portfolio. Nevertheless, the digital portfolio does offer a number of

significant benefits over the conventional style. Teaching technology skills within a relevant context, alleviating storage problems, and offering the preservice teacher a much more potent tool for job-hunting are the major advantages of the digital portfolio.

Teaching technology skills. A battle continues to rage regarding how to best teach the necessary technology skills to preservice teachers. One camp believes that schools of education should develop a series of courses designed to focus on teaching these needed skills. In contrast, another adheres to the idea of integrating the teaching of technology skills throughout all of the methods courses. Where does the answer rest?

Without becoming mired in a debate over how to best teach technology to teacher education students, it is axiomatic that the mastering of a body of technology skills by preservice teachers is now a necessary part of teacher training. The author believes that the key to effectively teaching the necessary technical skills to teacher education students lies in having them create a tangible, technical product (i.e., digital portfolio) that has personal meaning. Of course, the only manner in which to successfully generate the product is for the student to call on the technical skills that they garnered from their coursework. After having successfully completed a digital portfolio, preservice teachers will have corporeal evidence that they have met the established technology standards.

Using word processing software to generate resumes, taking photos with a digital camera, scanning images of teacher-made manipulatives are just an inkling

of the technical skills needed to complete a digital portfolio. However, these artifacts need to be digitized and cataloged for display electronically. Multimedia authoring software such as HyperStudio, produced by Roger Wagner Publishing (http://www.hyperstudio.com), may hold the answer. HyperStudio is extremely easy to use, and it can be quickly mastered by students. It can run from both the Macintosh and Windows platforms and will allow the importing of almost any type of audio, graphic, or video file format (e.g., wav, aiff, gif, tif, jpg, pict, avi, mov, etc.). In addition, it is very affordable ($139.00 per copy), with a discount for lab packages of ten or more copies. HyperStudio also allows direct publishing to the World Wide Web and has few glitches when being run from a network. Additionally, with the inclusion of a player file for each of the aforementioned platforms, a digital portfolio can easily be burned onto a standard recordable CD-ROM and run from any computer equipped with a standard CD-ROM drive.

Storage issues. The ten areas taken from the INTASC standards were previously identified as being the standard in which to index the contents of a presentation portfolio, but the question remains: What artifacts should comprise a digital portfolio for a teacher education student? Morgan (1999) suggested that the following items be included in the traditional preservice teacher portfolio, and there is no reason to assume that this list needs to be alerted for the digital portfolio:

1. Table of contents/dividers;
2. Resume (1-2 pages);
3. Educational philosophy;

4. Teaching artifacts and reflections;
5. Sample lesson plans;
6. Reflective commentary;
7. Sample student work (samples of tests, papers, quizzes, daily assignments, photos or videos of your students working on projects, etc.);
8. Professional information;
9. Formal evaluations from mentor teachers, university faculty advisor, principal, and peers;
10. List of contacts and letters of recommendations;
11. Additional items (resource materials, journal articles, certificates, professional memberships, seminars or conferences attended, etc.).

Upon close examination of the artifacts suggested by Morgan, it is found that they compliment the ten Headings/Standards suggested by Campbell et al. (1997).

Storage becomes a major issue when hundreds of preservice teachers are generating large volumes of material for their portfolios. Thankfully, with access to high-capacity storage mediums such as CD-ROMs, this is no longer a prohibiting factor in portfolio development. Including video clips and sound files in the portfolio is simple; import them into the authoring software and burn them on a CD-ROM with the other components of the portfolio. There is no need to use bulky videotapes or audiocassettes. Furthermore, papers can be scanned and saved in Portable Document Format (PDF) for easy exchange and printing. A single $2.00 CD-ROM can store what once may have taken 10 filing cabinet drawers.

Computer networks also offer a solution to this conundrum. To quell their portfolio storage problem, the University of Minnesota has turned to a piece of software known as *Portfolio 2.0* and its computer network. *Portfolio 2.0* is a powerful network software package that serves a myriad of purposes. It aids students in planning their portfolio, selecting items for display, and finally posting their product on the university server for others to view – be it faculty members, other students, or perspective employers. To experience this software first-hand, it is suggested you visit http://portfolio.umn.edu.

Employment. Once finished with teacher training, the only way for a preservice teacher to gain acumen in the field of education is to obtain a teaching position. The portfolio is an excellent tool that educational administrators could use to evaluate a candidate's credentials for teaching. The portfolio gives a realistic profile of the candidate to administrators charged with staffing classrooms. However, many administrators have complained that it is too time consuming to sift through the mass of paper usually associated with a traditional portfolio (Bouas & Bush, 1994).

The digital portfolio provides a much more efficient way for employment decision-makers to access the information they require. By using a logical indexing system, a high-impact statement can be made by a potential candidate with the multimedia capabilities of the digital portfolio. Administrators will have simple point-and-click access to a plethora of authentic material created by the applicant.

There is something to be said about the power of sending a CD-ROM version of one's presentation portfolio to a prospective employer.

Reaching employers is also simplified by digitizing the portfolio. Not only can a teacher candidate mail a CD-ROM version of the portfolio to school systems seeking candidates, but the World Wide Web offers an untapped potential when viewed as a distribution medium for an applicant. With web-based recruitment of teacher candidates now coming into vogue, placing a complete digital portfolio on the Web will allow hundreds of employers instant access to a detailed description of the candidate. A teacher applicant merely has to e-mail a school system the uniform resource locator (URL) of the website where the portfolio resides. This approach to garnering a position will breed confidence in the applicant's technology skills, and if the portfolio is constructured properly, a substantive overview of the other necessary skills needed to be a successful educator.

Conclusion

Digital portfolios serve the same purposes as the traditional portfolio in teacher education: (a) a vehicle for authentic assessment of students' strengths and weaknesses, (b) a creative method of allowing students to express who they are and what they can do, and (c) a tool to encourage reflective practice. However, digital technology has opened a number of doors that were once closed to the conventional style of portfolio. Without question, composing a digital portfolio has the potential to positively impact preservice teachers in the areas of learning technology skills

and gaining employment. Moreover, the digital portfolio format can lessen the tremendous storage burden for schools of education.

The digital portfolio needs a sophisticated infrastructure to be a viable vehicle in teacher education, but most schools of education already have the necessary hardware, software, and network capabilities in place. What is lacking, however, is a group of technically literate individuals to aid preservice teachers in bringing their products to fruition. Therefore, it is suggested that funds be earmarked for training individuals to master the necessary software and technical tools to instruct preservice teachers to compile their digital portfolio. The best source of personnel would be graduate students enrolled in an instructional technology or technology education program.

So, what does the future hold for the digital portfolio? It is clear that we live in an ever-changing world. The only thing certain about the future of teacher education is change, and fueling the change is technology. It is reasonable to assume that the future use of the portfolio in teacher education will be directly linked to future technologies, and where technology is headed is too difficult to suppose. Schools of education should explore the digital portfolio as a capstone project for preservice teachers. With proper support, developing a product such as a digital portfolio can bestow innumerable tangible and intangible benefits on preservice teachers.

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